Greater New Haven Water Pollution Control Authority

Old Chauncey Road Pump Station Replacement

Standardization Workshop

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Study Tasks

- Kickoff meeting
- Evaluate existing station, review alternatives and provide recommendations for replacement
- Technical memo w/design criteria, costs, proposed schedule, & permitting requirements
- Pump station standardization
  - Inventory existing stations
  - Group stations into appropriate categories
  - Identify opportunities for standardization

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Workshop Objectives

- Receive input and build consensus regarding:
  - Station categories
  - Categories that can/should be standardized
  - Components/systems that can/should be standardized
  - Standards applicable to Old Chauncey Road and similar pump stations

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Station Grouping Possibilities

- Size/capacity – large, medium, small
- Significance – same as size/capacity?
- Configuration – wet/dry pit, submersible, or can
- Location – coastal, inland, residential, industrial

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Grouping by Size

- **Large**

Morris Cove	East Street	Boulevard

- **Medium**

State/Union St	Quinnipiac	Welton St
Barnes Ave	Woodbridge	Stone St
Fairview Rd	Mill Rock	

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Large

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Medium

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Grouping by Size

- Small

Minor Rd	State St	Whitneyville
Old Grand Ave	Fort Hale	West Rock
Market St	Humphrey St	Mitchell Dr
New Grand Ave	Cosey Beach	Meadow St
Main St	Upper Thompson	Lovell St
Putnam Ave	Arch Street	Old Chauncey

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Small

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Station Configuration

- Wet/dry pit (Yeomans-Chicago)
- Below Grade "Can" (Dakota)
- Submersible (Flygt)
- Self-prime/suction lift (Gorman-Rupp)
- Vacuum-prime/suction lift (Smith & Loveless)
- Others, pneumatic ejectors?

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Station Configuration Considerations

- Life cycle cost (capital, O&M, power, longevity)
- Depth
- Space limitations and constructability
- Interchangeability/standardization of equipment
- Maintainability (ease of access, serviceability)

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Wet/Dry Pit Stations

- Advantages
  - Access
  - No depth limit
  - Longevity
- Disadvantages
  - High cost if new
  - Space requirements
- Can be built in place or prefabricated
- Pump options include extended shaft, close-coupled and dry pit submersible

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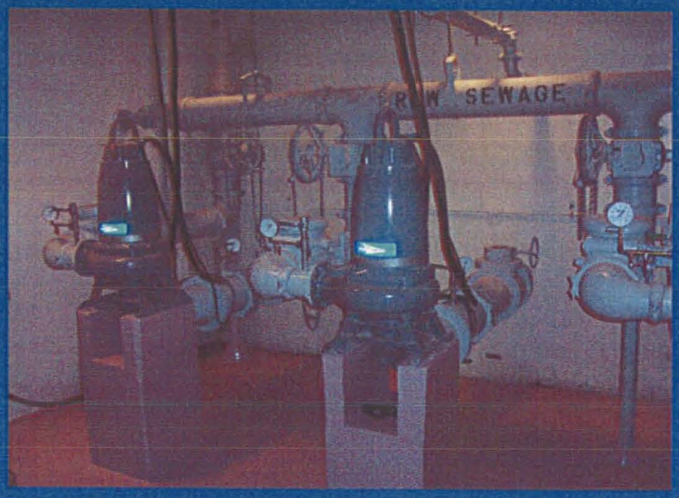
Wet/Dry Pit Stations



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Prefabricated Can Stations

- Advantages
  - Moderate cost
  - Pumps not in wetwell
  - No depth limit
- Disadvantages
  - Personnel access
  - Can longevity
  - Equipment access
- Pump options include close-coupled and dry pit submersible

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Prefabricated Can Stations

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Submersible Stations

- Advantages
  - Lowest cost
  - No depth limit
  - Building not required
  - Small footprint
- Disadvantages
  - Access to pumps
  - Pump maintenance
  - Wiring/connections
  - Pump longevity
- Wetwell can be built in place or prefabricated

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Submersible Stations

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Self-Prime/Suction Lift Stations

- Advantages
  - Ease of maintenance
  - Pumps not in wetwell
  - Moderate cost
  - Interchangeable components
- Disadvantages
  - Limited suppliers
  - Limited lift (25'+/-)
  - Efficiency
- Can be located in prefabricated enclosure or building

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Self-Prime/Suction Lift Stations

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Vacuum Prime Stations

- Advantages
  - Pumps not in wetwell
  - Moderate cost, slightly less than self-prime
- Disadvantages
  - Automatic priming system required
  - May be located partially over wetwell
  - Max depth 18' to 25'
- Usually located in a prefabricated enclosure

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Vacuum Prime Stations

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What's Most Appropriate for Old Chauncey Road Station and Other Small Stations?

- Submersible

or

- Self-Prime/Suction Lift

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Do You Want a Building?

- To house:
  - Electrical equipment and controls
  - Pumps (if self-prime/suction lift)
  - Emergency generator

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Building Types

- Precast concrete
- Precast concrete w/facade
- Brick & masonry block
- Stick built
- Stick built exterior/block interior

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Precast Concrete

- Advantages
  - Longevity
  - Maintenance
  - Schedule
  - Offsite testing
- Disadvantages
  - Hard to repair if poor quality
  - Few suppliers
  - Cost
  - Size restrictions
  - Limited aesthetics
- Appearance can be enhanced through façade improvements

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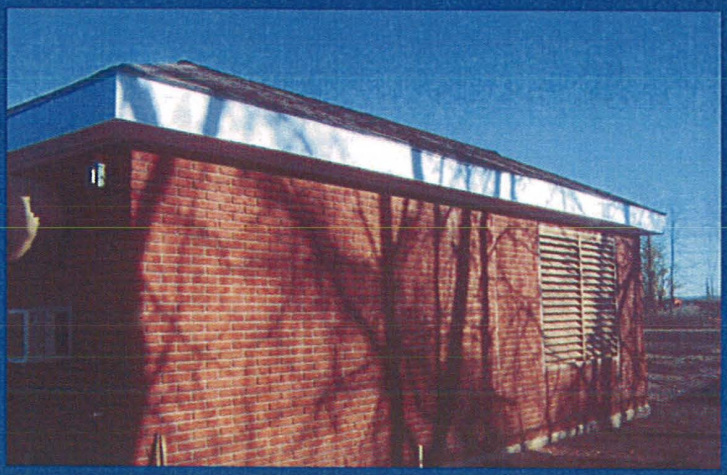
Precast Concrete



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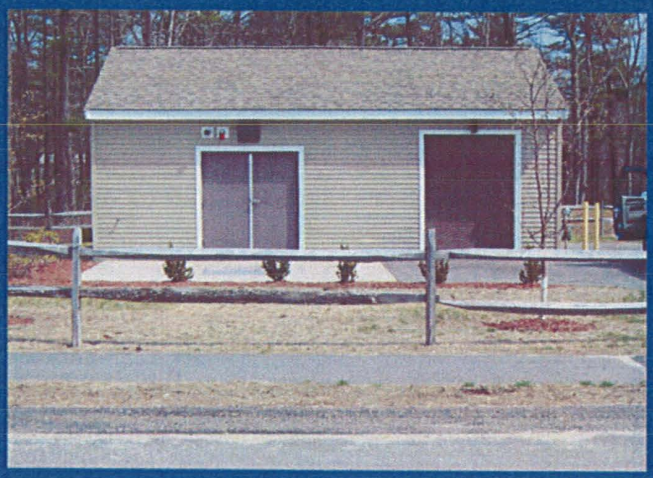
Precast Concrete w/Façade Improvements



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Brick & Masonry Block

- Advantages
  - Longevity
  - Maintenance
  - Aesthetics
- Disadvantages
  - Highest cost
  - Schedule
  - Multiple trades required
- Cost may be reduced w/single wythe block

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Brick & Masonry Block

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Stick Built

- Advantages
  - Schedule
  - Aesthetics
  - Lowest cost
- Disadvantages
  - Maintenance
  - Longevity
  - Durability

- Durability can be improved through the use of interior block or fiberglass laminated plywood

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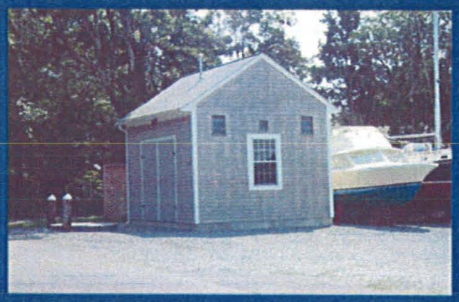
Stick Built Exterior w/Masonry Interior



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Other Station Systems & Concerns

- Emergency Power
- Odor Control
- Building and Site Security
- Bypass Pumping
- Control Systems
- SCADA
- Redundancy
- Wetwell Liners
- Emergency Storage
- Grinders

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